

A KEY TO NEARCTIC *STATIRA*
AND *ARTHROMACRA* (LAGRIIDAE)CARL T. PARSONS¹

ABSTRACT

The Nearctic species of *Statira* (composed of 18 species including 1 new species from Texas) and *Arthromacra* (composed of 3 species, one of which has 5 subspecies, of which 1 from Georgia, North Carolina, South Carolina, West Virginia, Tennessee, and Pennsylvania is described as new. Keys are provided to subfamilies of Lagriidae, and to species of Nearctic *Statira* and *Arthromacra*.

This brief account summarizes current knowledge of Nearctic *Statira* and *Arthromacra*. In addition there are several species of *Statira* which cannot be described until a larger sample is available. Traditionally Nearctic Lagriidae is composed of these 2 genera, but the genera *Anaedus*, *Prataeus*, and *Paratenetus* should be transferred from the Tenebrionidae and placed in the Lupropinae.

ACKNOWLEDGMENTS

Specimens in the collections of the following individuals and institutions were studied and are referred to by abbreviations as follows: American Museum of Natural History [AMNH], Academy of Natural Sciences Philadelphia [ANSP], British Museum [BM], C. A. Frost in MCZ [CAF], California Academy of Sciences [CAS], Carl T. Parsons in MCZ [CTP], Canadian National Collection [CNC], Cornell University [CU], Field Museum of Natural History [FMNH], Florida State Collection of Arthropods [FSCA], G. H. Nelson [GHN], H. C. Fall in MCZ [HCF], H. F. Howden [HFH], Illinois Natural History Survey [INHS], Karl Stephan [KS], Kansas State University [KSU], Los Angeles County Museum [LACM], Museum of Comparative Zoology [MCZ], Ohio State University [OSU], Southwest Research Station of the AMNH [SRS], University of Arizona [UA], University of California, Riverside [UCR], United States National Museum [USNM].

¹Carl Parsons, of Manchester Depot, Vermont, died 31 December 1973. Reprints of this article are available from T. J. Spilman, Systematic Entomology Laboratory, c/o U. S. National Museum, Washington, D. C. 20560.

²The head of the holotype was missing when Parsons returned the specimen to the USNM. He then intended to select another holotype from the type-series, but he died before he could do it. I have selected another male with the same measurements and the same locality data. The only changes made in Parsons' description are in the numbers of setigerous punctures on the elytral intervals.—T. J. Spilman.

Key to the Subfamilies of the Lagriidae

1. Penultimate segment of tarsi feebly lobed and not spongy beneath; front coxae globose, not projecting from cavities; apical antennal segment less than twice as long as 10th segment, often clavate; a visible membrane along hind margin of visible sternites 3 and 4 **Lupropinae**
- 1'. Penultimate segment of tarsi distinctly lobed and spongy beneath; front coxae conical, moderately exerted; apical antennal segment at least twice as long as 10th segment in Nearctic and most exotic genera; no visible membrane along hind margins of sternites 3 and 4 2
- 2(1'). Anterior coxae subcontiguous; prosternal process depressed, not raised, between the coxae (in exotic genera the prosternal process may be lacking) **Lagriinae**
- 2'. Anterior coxae separated by the prosternal process raised to a level about equal with the apices of the coxae; apex of prosternal process strongly deflexed **Statirinae**

Key to Nearctic *Statira* (Statirinae)

1. At least middle and hind tibiae distinctly sulcate along nearly entire outer edge; disc of pronotum rugulose 2
- 1'. Tibiae on outer edge rounded or flat (rarely feebly sulcate distally) as in *defecta*; disc of pronotum variably punctate, intervals between punctures usually alutaceous, rarely smooth 6
- 2(1). First elytral interval with not more than 6, 3rd interval with not more than 11, 5th interval with not more than 8, 7th interval with not more than 2, and 9th with not more than 5 setigerous punctures 3
- 2'. First elytral interval with not less than 8, 3rd interval with not less than 13, 5th interval with not less than 12, 7th interval with not less than 10, and 9th interval with not less than 11 setigerous punctures 4
- 3(2). Lateral margin of prothorax obliterated anteriorly, becoming distinct posteriorly; pronotum finely densely irregularly pitted, surface granular, rich dark brown; labrum, base of antennae, and legs paler; subopaque; female apical antennal segment equal to next 2.5 segments, in male equal to next 3 segments *subnitida*
- 3'. Lateral margin of prothorax obliterated or evanescent anteriorly but just discernible; pronotum more finely and obsoletely irregularly pitted, surface more or less smooth; opaque; piceous, except prothorax, scutellum, legs, and basal 2 antennal segments rufo-testaceous; female apical antennal segment equal to next 2.5 segments, in male equal to next 3-3.5 segments *colorata*

- 4(2'). Setigerous punctures on 1st elytral interval 8-16, on 3rd interval 14-21, on 5th interval 12-20, on 7th interval 10-17, and on 9th interval 12-20; lateral margin of prothorax almost always obliterated anteriorly but starting at the middle becoming distinct posteriorly, rarely the margin continuing obsolete to the anterior angles; margins of sulcus on fore and middle tibiae similar; head and prothorax dark rufous, elytra piceous black; pronotum finely rugulose; female apical antennal segment equal to next 2.75 segments, in male equal to next 3.25 segments *pluripunctata*
- 4'. Setigerous punctures on 1st elytral interval more than 19, on 3rd more than 20, on 5th more than 21, on 7th more than 16, and on 9th more than 21 5
- 5(4'). Lateral margin of prothorax obliterated anteriorly, becoming distinct posteriorly; margins of sulcus on fore and mid tibiae similar; female apical antennal segment equal to next 2.5 segments; elytral setae as long as 1st antennal segment; setigerous punctures on 1st elytral interval 23-33, on 3rd interval 26-39, on 5th interval 21-28, on 7th interval 18-26, and on 9th interval 18-30. Length 9.5-11.2mm *dumalis*
- 5'. Lateral margin of prothorax entire and distinct; either anterior or posterior margin of sulcus on fore and mid tibiae raised to form a blackish carina; female apical antennal segment equal to next 2.5 segments, in male equal to next 3 segments; elytral setae as long as first 2 antennal segments; setigerous punctures on 1st elytral interval 20-28, on 3rd interval 21-26, on 5th interval 22-26, on 7th interval 22-28, and on 9th interval 22-35. Length 7-8.5mm *hirsuta*
- 6(1'). Elytra testaceous to rufous with brown to black markings; no setigerous punctures on 5th elytral interval (except rarely 1 at apex) 7
- 6'. Elytra unicolorous, usually dark (testaceous in teneral examples); several setigerous punctures on 5th elytral interval 8
- 7(6). Female apical antennal segment equal to next 3.5-4 segments, in male equal to next 5 segments; testaceous to rufous, elytra slightly paler, with large blackish scutellar spot and transverse fascia slightly behind middle and wider at sides than at middle; setigerous punctures on 1st elytral interval 0-1 at base, on 3rd interval 4-6 from base to apex, on 7th interval 2 at base, on 9th interval 4 along apical fourth....
..... *pulchella*
- 7'. Female apical antennal segment equal to next 3-3.25 segments, in male equal to next 4-4.2 segments; rufotestaceous, median black spot on each elytron not reaching the suture; setigerous punctures on 1st elytral interval 1-2 at base, on 3rd interval 5-9, on 7th interval 2 at base, and on 9th interval 3-4 along apical fourth *nigromaculata*
- 8(6'). Setigerous punctures on 1st elytral interval 19-26, on 3rd interval 18-33, on 5th interval 17-23, on 7th interval 8-13, and on 9th interval 8-24 9
- 8'. Setigerous punctures on 1st elytral interval 2-5, on 3rd interval 1-15, on 5th interval 1-11, on 7th interval 1-8, and on 9th interval 4-11 10

- 9(8). Setigerous punctures on 1st elytral interval about 25, on 3rd interval 26-33, on 5th interval 17-23, on 7th interval 8-13, on 9th interval 8-17; setigerous punctures about as large as strial punctures; pronotum opaque; female apical antennal segment equal to next 3-3.25 segments, in male equal to next 4.25 segments. Length 9-11mm *opacicollis*
- 9'. Setigerous punctures on 1st elytral interval 19-25, on 3rd interval 18-21, on 5th interval about 18, on 7th interval about 8, and on 9th interval about 24; setigerous punctures at least twice as large as strial punctures; pronotum sub-opaque; female apical antennal segment equal to next 3, in male equal to next 3.75-4. Length 12.5-14mm *huachucae*
- 10(8'). Fore and middle tibiae rounded on outer edge; female apical antennal segment equal to next 2.5-4 segments..... 11
- 10'. Fore and middle tibiae flat on outer edge (rarely feebly sulcate distally); female apical antennal segment equal to next 2-2.25 segments, in male equal to next 2.5-2.75 segments; disc of pronotum very densely and finely punctate, the punctures less than their diameters apart, surface finely alutaceous; setigerous punctures on 1st elytral 4-5, on 3rd interval 3-6, on 5th interval 3-5, on 7th interval 1-3, and on 9th interval 5-6 *defecta*
- 11(10). Disc of pronotum with punctures on the average at least 3x their diameters apart or finely rugulose as in *latitator*; elytra testaceous to black (except bluish in *croceicollis*) 12
- 11'. Disc of pronotum with punctures separated by about their diameter; rufous, legs testaceous, abdomen piceous, elytra black with metallic bluish-green lustre; setigerous punctures on 3rd elytral 5-7, on 5th interval 4-5, on 7th interval 2 at base, and on 9th interval about 6; female apical antennal segment equal to next 3.25 segments, in male equal to next 5.5-5.75 segments. Length 9-10mm *liebecki*
- 12(11). Setigerous punctures on 3rd elytral interval 7-18 13
- 12'. Setigerous punctures on 3rd elytral interval 1-5 14
- 13(12). Length 10.5-12.5mm; female apical antennal segment equal to next 2.5-3 segments, in male equal to next 3.75-4.3 segments; brown to piceous black, head blackish; setigerous punctures on 3rd elytral interval 10-18, on 5th interval 11-17, on 7th interval 5-6 on basal 0.6 and on 9th interval 8-11....
..... *robusta*
- 13'. Length 7-10.5mm; female apical antennal segment equal to next 3-3.5 segments, in male equal to next 4.75-5 segments, prothorax and legs testaceous or rufous, head piceous, elytra piceous or black, the elytra with a distinct bluish lustre; setigerous punctures on 3rd elytral interval 7-14, on 5th interval 7-12, on 7th interval either 2 at base or 6-8 all along, and on 9th interval 5-13 *croceicollis*
- 14(12'). Setigerous punctures of elytra about the same size as the largest strial punctures; larger, 8-11.5mm 15
- 14'. Setigerous punctures of elytra about twice as large as strial punctures; smaller, 6.5-9.5mm 16

- 15(14). Posterior margin of fifth ventral segment produced around a distinct fovea; female apical antennal segment equal to next 3.6-3.75 segments, in male equal to next 4.6-5 segments, color paler, tending to brown rather than piceous, elytra tending to brown especially along sutural margins *dolera*
- 15'. Posterior margin of fifth ventral segment simple, without fovea; female apical antennal segment equal to next 4 segments or slightly less, in male equal to next 6.5-7 segments; color darker tending to piceous black, elytra sometimes slightly more pale and with very narrow brown sutural margins, rarely the prothorax may be bright rufous..... *basalis*
- 16(14'). Color dark brown to black; female apical antennal segment equal to next 3-3.3 segments, in male equal to next 5-6.5 segments 17
- 16'. Color testaceous, head and antennae fuscous, basal 6-8 antennal segments tending to piceous, elytra dusky laterally and posteriorly; surface of pronotum very finely obsolete rugulose; prothoracic lateral line obliterated anteriorly becoming distinct posteriorly; female apical antennal segment equal to next 2.25 segments, in male equal to next 2.6 segments. Setigerous punctures on 1st elytral interval 0-1 at base and 1-3 at apex, on 3rd elytral interval 0-1 at base and 1-3 at apex, on 5th elytral interval 1-2 at base, 0-1 near apex, on 7th elytral interval 1-2 at base, and on 9th elytral interval 2-3 at apex. Length 7.9-9.5mm *latitator*
- 17(16). Setigerous punctures on 1st elytral interval 2-4, on 3rd interval 1-4, on 5th interval 0-1, on 7th interval 0-1 near base, and on 9th interval 4-5; pronotum opaque due to distinctly granular surface and indistinct shallow punctures; female apical antennal segment equal to next 3.25 segments, in male equal to next 5 segments. Length 6.5-8.7mm *erina*
- 17'. Setigerous punctures on 1st elytral interval 2-3, on 3rd interval 4-5, on 5th interval 3-5, on 7th interval 1 at base, and on 9th interval 4-6; pronotum more or less shining with very obsolete granular surface and sparse fine punctures; female apical antennal segment equal to next 3-3.3 segments, in male equal to next 5.5-6.5 segments; color brown to black, rarely with testaceous prothorax. Length 6.5-8.8mm *gagatina*

To achieve brevity the present account of *Statira* is a supplement to my 1965 paper which should be consulted for references to original descriptions, types, type locations, habitats, and distribution in more detail.

Statira subnitida Leconte

Distribution: restricted to BAJA CALIFORNIA; 15-VII-38, 6 mi. N. of Triunfo; 13-VII-38, 5 mi. W. of San Bartolo; 8-X-41, San Venando; 27-VII-38, 45 mi. N. of San Ignacio; 23-VII-38, 20 mi. N. of Comondu; 10-VII-38, 3 mi. S. of Miraflores, all in [CAS]; 2-IX-59, 4 mi. N. of Todos Santos [UA]; Santa Rosa [HCF]; Cape San Lucas [MCZ].

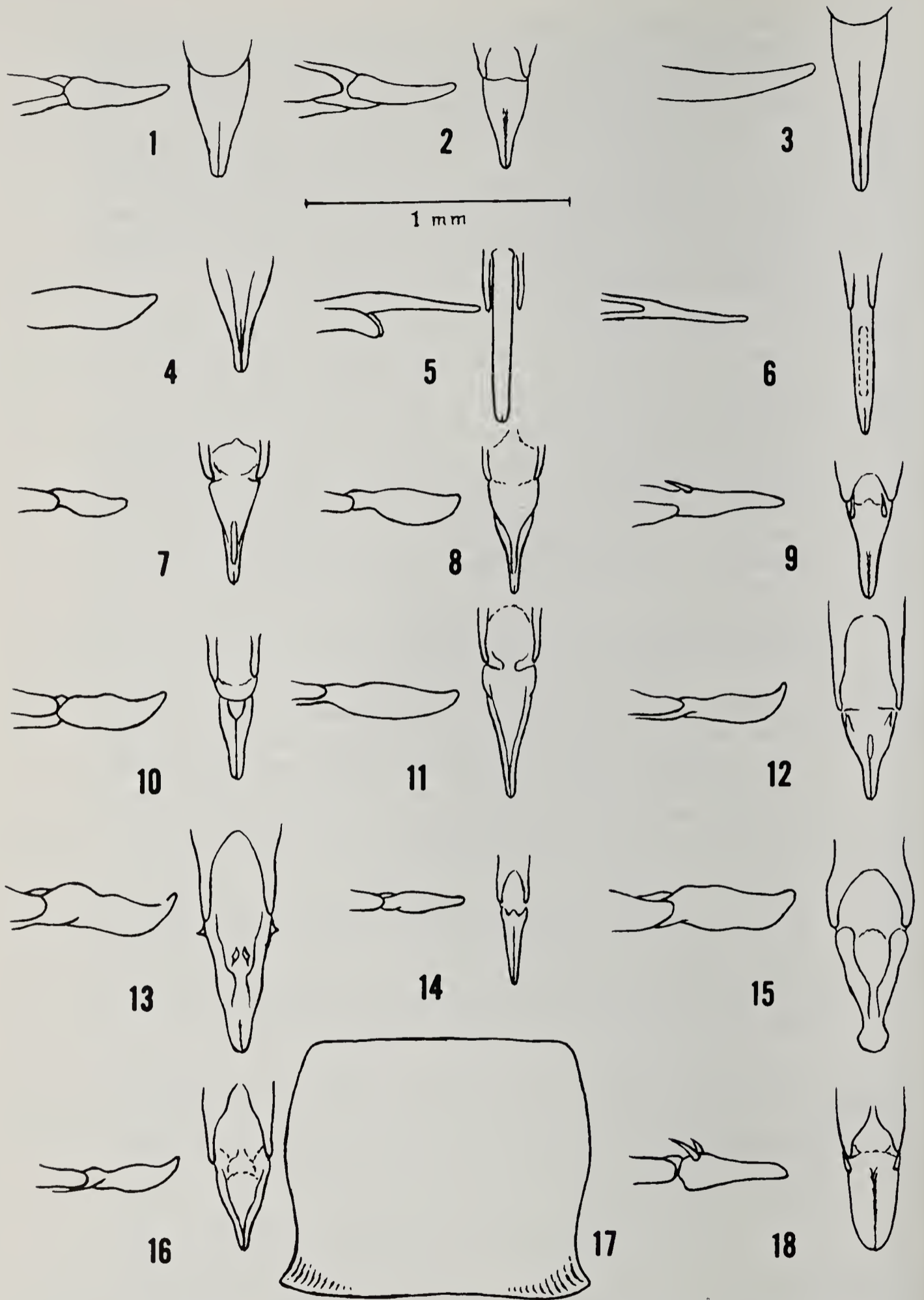


Fig. 1-18: Nearctic *Statira*, drawn to same indicated scale except Fig. 1, 3, 4, 18. Lateral and dorsal views of apices of genitalia. 1) *colorata*, holotype. 2) *pluripunctata*. 3) *hirsuta*, lectotype, Iguala, Guerrero. 4) *sulcricrus*, lectotype, Chilpancingo, Guerrero. 5) *pulchella*, Brownsville, Texas. 6) *nigromaculata*. 7) *opacicollis*. 8) *huachucae*. 9) *defecta*. 10) *liebecki*. 11) *robusta*. 12) *croceicollis*. 13) *dolera*. 14) *erina*, holotype. 15) *basalis*. 16) *gagatina*. 18) *latitator*. 17) *erina*, dorsal view of prothorax of holotype.

Statira colorata Fall

(Fig. 1)

H. B. Leech, *in litt.*, informed me that I was in error (1965) in stating that Charles Fuchs collected the type; he merely gave the specimen to Fall.

Distribution: restricted to BAJA CALIFORNIA; the following with identical San Jose del Cabo label; 1 male [ANSP], 2 males [Casey Coll. USNM], 1 male [HCF], 1 male [Hubbard & Schwarz Coll. USNM]; 7-VII-38, Triunfo [CAS], 15-VII-38, 6 mi. N. of Triunfo [CAS].

Statira pluripunctata Horn

(Fig. 2)

In my 1965 paper I made *sulcricrus* Champ. a synonym of *pluripunctata*. On examining the male type of *sulcricrus* from Chilpancingo, Guerrero [BM] I find that it differs in the pronotum being less rugulose and with more or less distinct fine punctures of various sizes. The color is uniform rich brown although 1 of 2 female syntypes has a paler prothorax. Also the genitalia (Fig. 4) is entirely distinct. Therefore *sulcricrus* is a valid species. The type of *sulcricrus* agrees with Champion's description (1889) but not with his key where each elytral interval is stated to have setigerous punctures.

Distribution: 3(TX, NM, AZ, CA, SO, CH); 4(UT, NV); also Durango and Guerrero, MEXICO.

Statira dumalis Parsons

Statira dumalis Parsons, 1973, Pan-Pacific Entomologist, 49(1):1-2.

Type: female from Imperial County, CALIFORNIA [CAS]; paratypes females from Imperial and Riverside Counties, CALIFORNIA [CAS] [LACM] [CTP].

Distribution: 3(CA).

Statira hirsuta Champion

(Fig. 3)

Statira simulans Schaeffer, 1905, Journ. New York ent. Soc. 13:180.

Distribution: 3(TX, TA, NL); also Sinaloa, Vera Cruz, Distrito Federal, Guerrero, Chiapas, MEXICO and NICARAGUA.

Statira pulchella Mäklin

(Fig. 5)

Distribution: 3(TX, TA); also Vera Cruz and San Luis Potosi, MEXICO.

Statira nigromaculata Champion

(Fig. 6)

Distribution: 3(TX, AZ, CH); also Vera Cruz, Morelos, Oaxaca, MEXICO and GUATEMALA.

Statira opacicollis Horn

(Fig. 7)

Distribution: 3(AZ). Known from the Galiuro, Sierra Ancha, Santa Catalina, Baboquivari, Santa Rita, Dragoon, and Chiricahua Mts., ARIZONA.

Statira huachucae Schaeffer
(Fig. 8)

My 1965 paper mentioned the possibility that *huachucae* might be the same as *alternans* Champ, but on examination I find that the male holotype of *alternans* from Tepamacoalco, Oaxaca [BM] has the apical antennal segment equal to the next 4.5 segments, setigerous punctures on 1st elytral interval 19, on 3rd interval 17, on 5th interval 17, on 7th interval 10, and on 9th interval 14. Thus *alternans* is distinct in having slightly longer apical antennal segment and in having fewer setigerous punctures except on the 7th elytral interval.

Known from the Santa Catalina, Santa Rita, Huachuca, and Chiricahua Mts., ARIZONA and 16-VIII-68, Skeleton Canyon, Hidalgo Co., NEW MEXICO [UCR].

Distribution: 3(AZ, NM).

Statira defecta Schaeffer
(Fig. 9)

Distribution: 3(AZ, NM).

Statira liebecki Leng
(Fig. 10)

In my 1965 paper I suspected that *liebecki* might be the same as var. a of *Statira mexicana* Champ. from Jalapa, Mexico [BM]. But Champion's var. a differs from *liebecki* in having a broader thorax, pronotum much more finely punctate, elytral intervals more flat, finer striae punctures, and the median lobe more broad when viewed from above.

An additional record for this very rare species is 16-V-39, Sebring, FLORIDA [OSU].

Distribution: 2(FL, AL).

Statira robusta Schaeffer
(Fig. 11)

In my 1965 paper I suggested that *robusta* might be identical with *tuberosa* Champion. But the former differs from *tuberosa* in being much larger, more robust, darker, pronotum shining although granular and distinctly finely punctate, the punctures separated by about 5x their diameters, and the elytral intervals are finely irregularly punctate; whereas *tuberosa* is dull, very finely and obsoletely punctate, with granular surface, the female apical antennal segment equal to the next 3.5 segments, and the 3rd elytral interval with 10 setigerous punctures.

Distribution: 3(TX, NM, AZ); 5(CO).

Statira croceicollis Mäklin
(Fig. 12)

Distribution: 1(MD); 2(SC, GA, FL, MS).

Statira dolera Parsons
(Fig. 13)

The first record from outside of FLORIDA is 5-V-30, St. Simon's Island, GEORGIA [USNM].

Distribution: 2(GA, FL).

Statira basalis Horn
(Fig. 15)

P. W. Fattig collected at Atlanta, GEORGIA 2 typical *basalis* on 21-V-37 and 21-IV-36. He also collected on 12-V-36 and 21-V-37 at Atlanta 2 *basalis* each with bright rufous prothorax. At Kennesaw Mt., Georgia, Fattig took 1 on 10-V-34 with rufous prothorax and 1 with typical black prothorax. There are no other differences, in genitalia, etc. This variation duplicates what has been called *resplendens* under *gagatina*.

Distribution: 2(NC, SC, GA, FL, AL, MS, LA, AR); 3(TX); 5(MO).

Statira erina Parsons, **new species**
(Fig. 14, 17)

Color piceous to piceous black, somewhat more pale beneath, legs and basal antennal segments brown to piceous. Vertex slightly narrower than labrum in both sexes, surface distinctly granular and with irregular dense punctures. In the male the eleventh antennal segment as long as 10th, 9th, 8th, 7th, and 6th segments; in the female 11th antennal segment as long as 10th, 9th, 8th, and 0.25 of 7th segments. Prothorax with width to length as follows: holotype male 1/1.12, allotype 1/1.21 (range for males: 1/1.12-1/1.20; range for females: 1/1.20-1/1.22). Anterior margin of prothorax distinctly truncate, posterior margin emarginate at middle; prothoracic lateral line distinct and entire; surface of pronotum opaque due to being distinctly granular and having fine indistinct shallow punctures separated on average by 3x their diameters. Scutellum finely granular, sparsely punctate and with an irregular row of punctures around margin.

Elytra striate, with unusually fine punctures closely placed along the striae; intervals moderately convex and more obsoletely granular than pronotum so that the surface is more shining. Setigerous punctures at least twice as large as unusually fine strial punctures. In presenting the numbers of setigerous punctures along the elytral intervals the first figure is for the left elytron and the second for the right elytron and figures are given for the holotype, allotype, and range among the paratypes. First elytral interval: holotype 1,1 at base, 2,2 near apex; allotype 1,1 at base, 2,2 near apex; paratypes 1, 0-1 at base, 2, 2-3 near apex. Third elytral interval: holotype 1,1 at base, 1,1 at three-fifths, 0,1 near apex; allotype 1,1 at base, 3,2 at apical fourth; paratypes 0-2, 0-1 at basal third, 1-3 near apex. Fifth elytral interval: holotype 1,1 at base; 1,1 at apical fourth; allotype 1,0 at base, 1,1 at apical fourth; paratypes 1-1, 0-1 at base, 0-1, 0-1 at apical fourth; paratypes 0-1, 0-1 near base. Ninth elytral interval: Holotype 4,3 along apical fourth; allotype 4,5 along apical fourth; paratypes 4,5, 4,5 along apical fourth. All femora very sparsely and finely pubescent; all tibiae rounded on outer edge. Medium lobe as figured.

Holotype² **male:** length 7.3mm, width of prothorax 1.3mm, width of

elytra at humeri 1.9mm; **allotype female**: length 9.5mm, width of prothorax 1.6mm, width of elytra at humeri 2.5mm; paratypes: length 6.5-8.7mm.

Type material: holotype male, 9-10-IV-1969, Brownwood Lake State Park, Brown County, TEXAS, A. & M. E. Blanchard. Allotype, 7-V-1970, Bastrop State Park, Bastrop County, TEXAS, A. & M. E. Blanchard; 5 male and 1 female paratypes same data as holotype; also 1 female paratype 6-V-1970, Belton Reservoir, Bell County, TEXAS, A. & M. E. Blanchard. All of the above types in the USNM, except 1 pair of paratypes in the author's collection. Also at Ohio State University are 2 female paratypes, 5-IV-1953 and 6-V-1946, Gillespie County, TEXAS, D. J. & J. N. Knull. At Field Museum of Natural History 1 female paratype, 22-27-IV-1950, 2.5 mi. S.W. of Forestburg, Montague County, TEXAS.

This species is distinctive in having fewer setigerous punctures than any North or Middle American species. Also the opaque anteriorly truncate pronotum is diagnostic.

Statira gagatina Melsheimer
(Fig. 16)

Statira resplendens Melsh., 1846, Proc. Acad. Nat. Sci. Philadelphia, 2:311.

Statira gagatina resplendens Melsh. of Parsons, 1965:253, **New Synonymy**.

It seems best to drop *resplendens*, which is discussed in my 1965 paper. The rarely testaceous prothorax is a variation similar to that found in *basalis*.

Distribution: 1(VT, MA, CT, NY, NJ, PA, OH, IN, IL, MI, WI, DC, MD, DE); 2(KY, TN, NC, AL, AR); 5(KS, IA).

Statira latitator Parsons
(Fig. 18)

Statira latitator Pars., 1973, Pan-Pacific Entomologist, 49(1):3-4, fig. 1, 2.

This very local species is known only from Deep Canyon, Riverside County, CALIFORNIA and Puertocito, BAJA CALIFORNIA.

Distribution: 3(CA, BJ).

Key to Nearctic *Arthromacra* (Lagriinae)

1. Eleventh antennal segment of female as long as 10th, 9th, and 0.25-0.66 of 8th segments combined; of male as long as next 2-3.5 segments combined. Disc of pronotum usually rugose or alutaceous or both 2
- 1'. Eleventh antennal segment of female as long as 10th, 9th, 8th to 7th segments combined; of male as long as next 4th to 6th segments combined. Disc of pronotum not rugose, very rarely alutaceous 5
- 2(1). Disc of pronotum finely sparsely punctate, punctures separated by 3-6 times their diameters. Disc of pronotum usually shining, not alutaceous. Eleventh antennal seg-

- ment of female as long as next 2.6-2.66 segments, of male as long as next 3.5 segments. Upper surface appears glabrous at 60x magnification. Mesepimeron very finely and sparsely punctate..... 3
- 2'. Disc of pronotum coarsely, densely punctate, punctures separated by 1-2 times their diameters or partially confluent. Disc of pronotum usually opaque, alutaceous. Upper surface feebly pilose, usually visible at 60x magnification. Mesepimeron moderately coarsely and densely punctate 4
- 3(2). Disc of pronotum more or less strongly transversely rugose. Eleventh antennal segment of female as long as next 2.6 segments. Mesepisternum usually granular between the punctures. Color above almost always without cupreous tinge. Femora and tibiae usually piceous..... *aenea rugosecollis*
- 3'. Disc of pronotum not or only moderately transversely rugose. Eleventh antennal segment of female as long as next 2.66 segments. Mesepisternum usually smooth between the punctures. Color above usually with more or less of a cupreous tinge. Femora and tibiae usually rufous.....*aenea glabricollis*
- 4(2'). Eleventh antennal segment of female as long as next 2.66 segments, of male as long as next 3.25 segments *aenea lengi*
- 4'. Eleventh antennal segment of female as long as next 2.25-2.33 segments, of male as long as next 2.75-3 segments.....
..... *aenea appalachiana*
- 5(1'). Eleventh antennal segment of female as long as next 3.5-4 segments, of male as long as next 5-6 segments 6
- 5'. Eleventh antennal segment of female as long as next 2.9-3.1 segments, of male as long as next 4 segments. Pronotum appears glabrous at 60x magnification..... *aenea aenea*
- 6(5). Eleventh antennal segment of female as long as next 3.5 segments, of male as long as next 5 segments. Upper surface distinctly but sparsely pilose, much more pilose than any other species. Color above usually bright metallic bronze green.....
..... *pilosella*
- 6'. Eleventh antennal segment of female as long as next 4 segments, of male as long as next 6 segments. Upper surface appears glabrous at 60x magnification except elytra where pilosity is more apparent. Color above of females usually vivid metallic green, of males greenish blue or green, both sexes with aeneous tinge..... *robinsoni*

I have spent much time attempting to solve speciation in *Arthromacra*. A clue was given to Leng (1914) by Col. W. Robinson who captured abundantly at the same time and place both *robinsoni* and *aenea* in copulation. But in no cases were examples of *aenea* seen mating with *robinsoni*. Therefore these 2 species are considered distinct. But among our other *Arthromacra* the following apparent intergrades turn up in collections: *aenea* x *glabricollis*, *glabricollis* x *rugosecollis*, *aenea* x *lengi*, and *aenea* x *appalachiana*. One solution is to include these names under the single species *aenea*. As will be seen by the following key and figures such lumping

would create a very variable "species". Also these names have geographical significance with intergrades occurring along common boundaries. Therefore trinomials are used to indicate their close relationship. The terminal abdominal segments and genitalia of both sexes show such variability that figures would only be confusing.

Arthromacra aenea aenea (Say)

(Fig. 19, 27)

Lagria aenea Say, 1824, Narrative of an Expedition to the Source of St. Peter's River, etc. vol. 2:287-8. LeConte edition, 1869, 1:191.

Arthromacra donacioides Kirby, 1837, Fauna Boreali-Americana, 4:238.

Statira aenea var. *c. viridis* Melsh. (*Lagria viridis* Melsh. Cat.), 1846, Proc. Acad. Nat. Sci. Philadelphia, 2:311, **New Synonymy.**

Types: type of *aenea* from the "United States" is lost. Since Say stated that the thorax is "sometimes with transverse abbreviated wrinkles" his types included more than typical *aenea*. His single definite locality is the Red River near Lake Winnipeg, Manitoba. This locality would preclude any

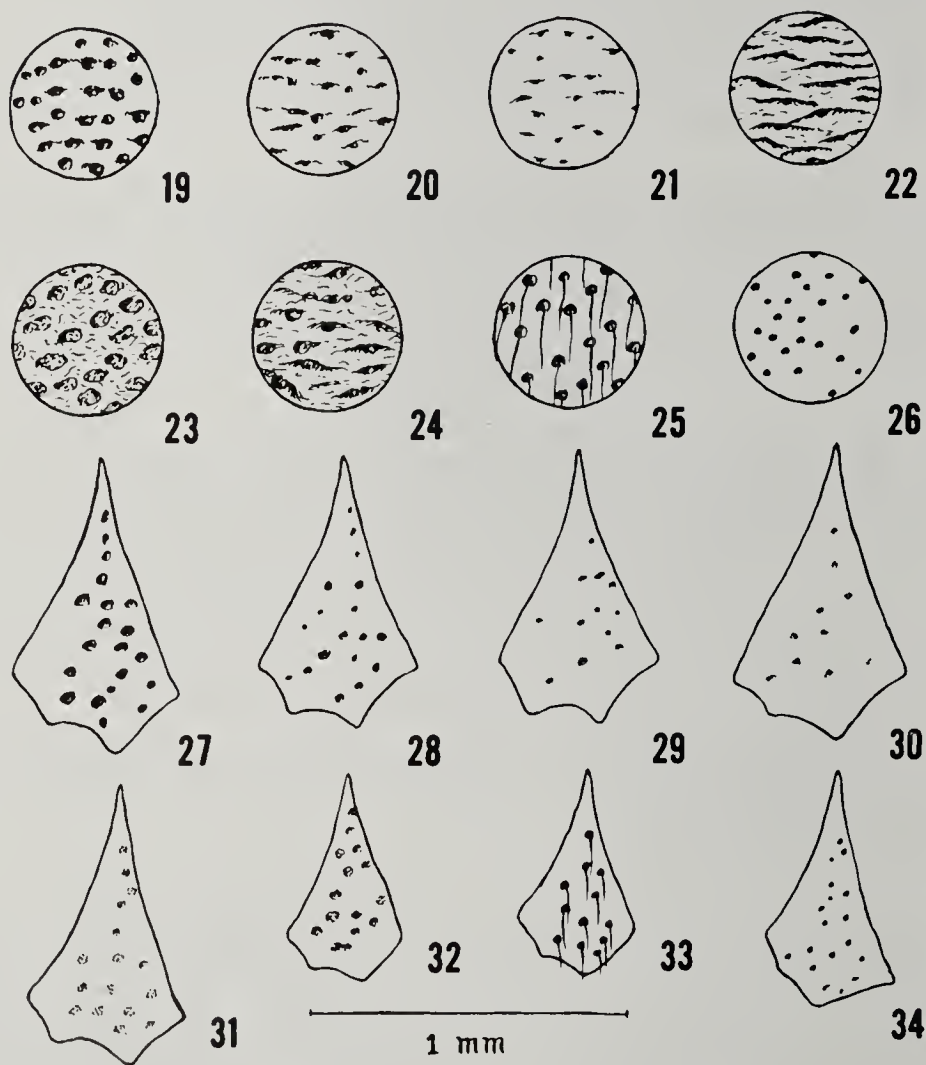


Fig. 19-34: Nearctic *Arthromacra*. Fig. 19-26: surface of part of pronotum near center. Fig. 27-34: left mesepimeron. 19, 27) *aenea aenea*. 20, 28) *aenea* x *glabricollis*. 21, 29) *glabricollis*. 22, 30) *rugosecollis*, holotype. 23, 31) *aenea lengi*, holotype. 24, 32) *appalachiana*, "cotype". 25, 33) *pilosella*, "cotype". 26, 34) *robinsoni*, paratype (26), allotype (34).

forms but *glabricollis* but most of the description applies to typical *aenea* as here defined. Syntypes of *donacioides* were collected near Lake St. Clair, Ontario and Massachusetts [BM]. Type of *viridis* not found in the MCZ and because it is said to be brilliant green and slender it is more likely *appalachiana* or *robinsoni* rather than a male *aenea*. No locality is stated.

Distribution: 1(QU, ON, ME, NH, VT, MA, CT, NY, NJ, MD, DC, DE, PA, OH, MI); 2(VA, WV, NC, TN); 5(MB).

Arthromacra aenea rugosecollis Leng, **new status**
(Fig. 22, 30)

Arthromacra aenea var. *rugosecollis* Leng, 1914. J. New York Ent. Soc. 22:

287. **Type:** female collected by C. W. Leng in July in the mountains of Rabun County, GEORGIA in the author's collection.

The holotype has the appearance of an unusually large *aenea*. Often specimens are vivid metallic green as in *robinsoni*. Mesepimeron very finely and sparsely punctate as in *glabricollis*. Mesepisternum coarsely punctate, intervals obsoletely granular or smooth. The character of the pronotal rugosity tends to appear in *glabricollis*. Two females June 9, Frankfort, Kentucky [USNM] are possible intergrades approaching *rugosecollis* in their piceous black femora and feebly rugose pronotum. Also 2 *glabricollis* (Fig. 20, 28) from Illinois [CTP] have pronotum feebly to moderately rugose and in 1 the pronotum finely punctate as in *rugosecollis*.

Distribution: in addition to the holotype 1 female 24-VI-1930, 2000 ft., Monteagle, TENNESSEE [AMNH]; 1 male 7-IV Retreat, NORTH CAROLINA [USNM], 1 female 18-VI-1937, Head River, GEORGIA [CAF]; 9-VI-63, 29-VI-61, Clinton County, OHIO [OSU].

Arthromacra aenea glabricollis Blatchley, **new status**
(Fig. 21, 29)

Arthromacra glabricollis Blatchley, 1910, Coleoptera of Indiana, p. 1285, Fig. 570.

Type: 4 June Posey Co., INDIANA [USNM], paratypes, same data [USNM] [FMNH].

Having the appearance of typical *aenea* although sometimes larger, often cupreous above, femora often more pale, and to be looked for among *aenea* from Ohio westward. Mesepimeron very finely and sparsely punctate as in *rugosecollis* but not as in *aenea*. Mesepisternum coarsely punctate, intervals usually smooth, rarely transversely granular. A female from Kentucky and a male from Virginia intergrade with *rugosecollis* and a female from Illinois intergrades with *aenea*.

Distribution: 2 females OHIO [Leconte Coll. M.C.Z.]; 18-VI-26, Mohahala, OHIO [CU]; 12-VI-61, 27-VI-61, 9-VI-63, Clinton County, OHIO [OSU]; Posey County, INDIANA [USNM] [FMNH]; ILLINOIS: many localities [AMNH] [CTP] [HCF] [INHS]; 1 female Frankfort, KENTUCKY [USNM]; MISSOURI [USNM]; 1 male VIRGINIA [HCF]; WISCONSIN [INHS]; 15-VI-41, Indian Creek, PENNSYLVANIA [INHS]; 4-VI-92 Allegheny County, PENNSYLVANIA [CU]; 30-V-18, Homestead, IOWA [LACM].

Arthromacra aenea lengi Parsons **new subspecies**
(Fig. 23, 31)

Having the general appearance of typical *aenea* and to be looked for in collections as *aenea* from North Carolina southwards. Color blackish with purplish greenish caste and underside more blackish with an aeneous tinge, femora piceous or black, tibiae slightly paler, and tarsi testaceous to brown; antennae rufous except basal and apical segments may be piceous. Vertex with intervals between punctures more or less granular and alutaceous, therefore not smooth as in *aenea*, the punctures more sparse than in *appalachiana*. Apical antennal segment in both sexes a little longer than in *appalachiana* and a little shorter than in *aenea*; female eleventh antennal segment as long as next 2.66 segments, in the male as long as next 3.25-3.33 segments. Pronotum very sparsely pilose (often evident only at the sides), pilosity easily visible at 60x magnification, as in *appalachiana* but not as in *aenea*. Disc of pronotum with punctures mostly less than their diameters apart, more shallow and coarse than in *aenea* (except in some males) and more fine and sparse than in *appalachiana*. Surface of pronotum variably rugose, more than in *aenea* but less than in *appalachiana*; intervals between punctures more or less granular or alutaceous as in *appalachiana* but not smooth as in *aenea*.

Elytra very densely punctate, the intervals between punctures alutaceous as in *appalachiana*, not smooth as in *aenea*. Mesepimeron moderately coarsely densely punctate but finer than in *aenea*, intervals opaque; mesepisternum coarsely punctate, intervals transversely granular.

Holotype female: length 13.5mm, width of pronotum 2.2mm, width of elytra at humeri 3.2mm. **Allotype male:** length 11mm, width of pronotum 1.7mm. Typical male paratype: length 10mm, width of pronotum 1.7mm, width of elytra at humeri 2.5mm.

Type material: holotype female, VI-1909, 2000-3700 ft., Clayton, GEORGIA, C. W. Leng [CTP]; allotype, NORTH CAROLINA [HCF]; Paratypes: 1 female July, Rabun County, GEORGIA [CTP]; 1 female NORTH CAROLINA [HCF]; 2 males, 4 females 1-VI-1933 and 26-VI-1934, Rocky Bottom, Pickens County, SOUTH CAROLINA [USNM]; 1 female 12-VI-34, Mountain Rest, SOUTH CAROLINA [USNM]; 1 female 31-V Retreat, NORTH CAROLINA [USNM]; Smokemont, NORTH CAROLINA [CU]; 1 male 27-V 1 female VI, Black Mts., NORTH CAROLINA [AMNH]; 1 female Lake Toxaway, NORTH CAROLINA [AMNH]; 1 male 17-VI Graybeard Mt., NORTH CAROLINA [CTP]; 2 males 14-VI-31, Neel Gap, GEORGIA [USNM]; 1 female 17-VI-55, Haywood County, NORTH CAROLINA [FSCA]; 1 male 3-VI-55, Cranberry Gls., WEST VIRGINIA [FSCA]; 21-VII-47, Cove Forest, Gatlinburg, TENNESSEE [INHS]; VI-1938, Somerset, PENNSYLVANIA [INHS]; 22-VI-41, 2-VII-40, Indian Creek, PENNSYLVANIA [INHS].

This subspecies has antennae which are intermediate between *aenea* and *appalachiana* and can be separated reliably from the latter only on the basis of antennae. It agrees with *appalachiana* in being feebly pilose and having the surface alutaceous or granular but tends to have the pronotum more finely and sparsely punctate with the rugae less transverse, more irregular, and more obsolete. There are 2 males and 1 female from Rocky Bottom, South Carolina [USNM] which are not made paratypes because the pronotal sculpture approaches that of *aenea*. Another male, 5-VI-27,

Whiteside, North Carolina [USNM] approaches *aenea* in having slightly longer apical antennal segment, being equal to the next 3.5 segments. Also a male from Saluda, North Carolina [USNM] differs in having the pronotal punctures fine and obsolete.

Arthromacra aenea appalachiana Leng
(Fig. 24, 32)

Arthromacra appalachiana Leng, 1917, Bull. Brooklyn Ent. Soc. 12:18.

Type: male, no. 21149, June 30, Pennington Gap, Virginia [USNM].

Paratypes (labelled "cotypes" by Leng): June 20, Black Mts., North Carolina [CTP]; June 25, Graybeard Mt., North Carolina [AMNH].

Usually distinctly more slender and more brightly bluish green than *aenea*. In both sexes the apical antennal segment is shorter than in any other American *Arthromacra*. Mesepimeron finely obsolete punctate, intervals alutaceous. Mesepisternum coarsely obsolete punctate, intervals distinctly alutaceous.

Distribution: in addition to the above types, 1 female 21-VII-34, Blounts, TENNESSEE [MCZ]; 2 males 2-VII-47, Grassy Bald, Gatlinburg, TENNESSEE [INHS]; 3 males VI-1939, 4-6000 ft., Mt. Mitchell, SOUTH CAROLINA [MCZ] [CTP]; 1 male 30-VI-35, Sunburst, SOUTH CAROLINA [MCZ]; 1 female 9-14-VI-40, 5000 ft., Catalooche Divide, SOUTH CAROLINA [MCZ]; 1 male, 1 female April-May and June 21, 3-5000 ft., Highlands, NORTH CAROLINA [USNM]; June 6, 3-4000 ft., Blowing Rock to Linville, NORTH CAROLINA [MCZ].

Arthromacra pilosella Leng
(Fig. 25, 33)

Arthromacra pilosella Leng, 1917, Bull. Brooklyn Ent. Soc. 12:18-19.

Type: male June 20, Nashville, TENNESSEE, no. 21150 [USNM].

Paratypes: from type locality and Frankfort, KENTUCKY [USNM] [AMNH] [CTP ex C. W. Leng].

Distribution: 20, 26-VI Nashville, TENNESSEE [USNM] [CTP]; 1 male 18-VI Clarksville, TENNESSEE [USNM]; 1 male, 2 females Evansville, INDIANA [USNM]; 7-V Frankfort, KENTUCKY [USNM] [CTP]; VII Mammoth Cave, KENTUCKY [CU].

Arthromacra robinsoni Leng
(Fig. 26, 34)

Arthromacra robinsoni Leng, 1914, J. New York Ent. Soc. 22:286-7.

Type: male and allotype, 13-VI-1913, Nelson County, VIRGINIA stated by Leng to be in his collection, now in author's collection.

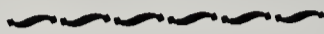
Paratypes: same locality [USNM] [CTP].

Leng quotes Col. Robinson's statement that "when fresh, the males are brilliant green, the females a red gold with greenish tinge; but after a while the females change to green like the males".

Distribution: a large series collected over several years at the type locality, Nelson County, VIRGINIA from 20-V-8-VII, mostly on 20 and 30-VI [USNM] [MCZ] [AMNH] [CU] [CTP] Kansas State University and 16-VI-65, Wake County, NORTH CAROLINA [FSCA].

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A REMARKABLE PREDACIOUS CETONIID, *SPILOPHORUS MACULATUS* (GORY & PERCHERON), FROM SOUTHERN INDIA (COLEOPTERA: SCARABAEIDAE)

KUMAR D. GHORPADE

Department of Entomology, University of Agricultural Sciences,
Bangalore-560024, India

ABSTRACT

A peculiar cetoniid beetle, *Spilophorus maculatus* (Gory & Percheron), belonging to the tribe Cremastocheilini, is reported feeding in nature on the nymphs of a membracid bug, *Oxyrhachis tarandus* (Fabr.), near Bangalore in southern India. This is the first record of a cetoniid feeding on an insect other than an ant. A redescription of the cetoniid is included together with a short summary of the feeding habits of adult Scarabaeidae.

The large beetle family Scarabaeidae, of which the Cetoniinae is thought to be only a subfamily (Mikšić 1971), is almost entirely phytophagous, the larvae living in soil and feeding on plant roots and decaying matter, the adults attacking foliage, flowers, and fruit. Adult cetoniids are usually brightly coloured, fly by day, and feed on flowers of a variety of plants. According to Imms (1963) their "... mouthparts are adapted for dealing with soft or liquid food and the labrum is membraneous and concealed; the mandibles, with few exceptions, are thin and incapable of biting, and the maxillae are invested with long hairs."

Writing about the only known fully carnivorous cetoniid, Wilson (1971) stated that certain North American species of the genus *Cremastocheilus* were recently discovered by Dr. Mont A. Cazier and his colleagues to be obligate predators of the larvae of ants of the genus *Myrmecocystus*; the ants treated the beetles sometimes as synechthrans and sometimes as symphiles but they mostly had the status of synoeketes.

Adult cetoniids, apart from their well-known habit of feeding on plant juices, pollen and nectar of flowers, have also been found to be associated with ants and termites, as well as in nests of passerine birds. Besides the above record of species of *Cremastocheilus* preying on ant larvae, no other cetoniid is known to feed on any other insect.